BRESLAU BRIDGE
(Plymouth-Breslau Bridge)
Crossing the North Branch of the Susquehanna River
on Hanover-Fellowes Avenue
Plymouth vicinity
Luzerne County
Pennsylvania

HAER No. PA-479

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
Northeast Field Area
Chesapeake/Allegheny System Support Office
National Park Service
U.S. Custom House
200 Chestnut Street
Philadelphia, PA 19106

HAER
PA
40-PLYM.V
1-

HISTORIC AMERICAN ENGINEERING RECORD

BRESLAU BRIDGE
(PLYMOUTH-BRESLAU BRIDGE)

HAER NO. PA-479

Location: Crossing the North Branch of the Susquehanna River on Hanover Street-Fellowes Avenue, from Plymouth Borough to Hanover Township, Luzerne County, Pennsylvania.

UTM: 18.420350.4565860
Quad: Wilkes-Barre West

Dates of Construction: 1911-14; widened 1945-1946.

Engineer: Scofield Engineering Company, Wilkes-Barre, Pennsylvania (original design): Arthur G. Leake and Company, Harrisburg, Pennsylvania (bridge widening, 1945-1946).

Fabricator: Penn Bridge Company, Beaver Falls, Pennsylvania, H.S. Battie, Resident Engineer (original trusses); Arthur G. Leake and Company, Harrisburg, Pennsylvania (bridge widening, 1945-1946).

Present Owner: Luzerne County
Wilkes-Barre, Pennsylvania

Present Use: Constructed for vehicular and pedestrian traffic; closed to vehicular traffic since 1985.

Significance: The Breslau Bridge (Plymouth-Breslau Bridge) is an exceptionally long, multiple-span steel truss structure, comprising six Parker truss spans in combination with steel plate girder and reinforced concrete approach spans for a total structure length of 2,050 feet. Constructed in 1911-1914, it was the first major bridge built by Luzerne County. In 1945-1946, the Breslau Bridge was widened in accordance with an innovative method developed by Arthur G. Leake and Company.

Project Information: This documentation was undertaken from August 1989 through June 1994 by Luzerne County and the Pennsylvania Department of Transportation (PennDOT) as a mitigation measure prior to removal of the bridge.

P.A.C. Spero & Company
Historic Structures Consultants
Baltimore, Maryland
for Luzerne County and PennDOT

The Breslau Bridge (Plymouth-Breslau Bridge) crosses the North Branch of the Susquehanna River in Luzerne County, Pennsylvania, connecting Hanover Street in Plymouth Borough and Fellowes Avenue in the community of Breslau in Hanover Township. Constructed in 1911-1914, the bridge main spans comprise six steel Parker trusses, each measuring 207 feet long. The total length of the structure is 2,050 feet, with a 550 foot landside approach at the Plymouth Borough end consisting of reinforced concrete beams and slabs, steel plate girders, steel I-beams and concrete slab on retaining wall structures, and a 253 foot three-span steel plate girder riverside approach on the Hanover Township end. The structural steel for the bridge was fabricated by the Penn Bridge Company of Beaver Falls, Pennsylvania; the Horsehead Construction Company was responsible for its erection. As originally built, the bridge measured 20 foot wide center-to-center at the trusses, with an 18 foot clear roadway; in 1945-46, the structure was widened an additional five feet on the downstream elevation.

The Breslau Bridge is an exceptionally long multiple-span steel truss structure. It is unusually massively-structured for its construction date, and incorporates unique decorative work at the portals. The first major bridge constructed entirely at the expense of Luzerne County, it is one of the few long-span North Branch Susquehanna River bridges constructed around the turn of the twentieth century to survive; other structures of this era, such as the Catawissa and Bloomsburg bridges in Columbia County, have been demolished. The 1945 rehabilitation of the Breslau Bridge was accomplished in an innovative manner which involved working with the existing structure rather than replacing it. At that time, the consulting engineer, Arthur G. Leake of Harrisburg, widened the structure utilizing his patented system. Rather than detracting from the significance of the structure, this episode in its history enhances its technological interest.

The Breslau Bridge incorporates six steel Parker truss spans. A variation of the commonly built Pratt truss, the Parker truss utilizes the same basic configuration of tension and compression members as the 1844 Pratt truss type, but has an inclined top chord whose slope changes at each panel point. Constructed from the last quarter of the nineteenth century into the twentieth century, the Parker truss configuration allows for higher load carrying capacity over the Pratt truss while using almost the same amount of material. Its primary disadvantage was the higher cost of manufacturing due to the varying sizes of the truss members.

The first structure to cross the Susquehanna River at this location, the bridge was constructed in response to demand for a free public crossing between Plymouth Borough and Hanover Township. Plymouth was the birthplace of the anthracite coal industry in the United States, and had enjoyed the benefits of the industry's rapid expansion in the late nineteenth century. By the turn of the twentieth century, however, the coal resources on the Plymouth side of the Susquehanna were playing out, and miners and merchants alike looked for their continued livelihood to the new coal fields across the river in Hanover Township. At the time, the only bridge linking the two areas was a toll bridge located at the east end of Plymouth Borough; citizens objected to the

toll, and found the bridge's location inconvenient.

First settled in the 1760s, Plymouth and Hanover Townships were among the five original townships formed by resolution of the Susquehanna Company at Hartford, Connecticut on December 28, 1768. Settlers began arriving in the following years; many settled along the north bank of the Susquehanna River at the site of the present borough of Plymouth, and a village began to emerge in the area of the present Main Street.

The eighteenth century settlers were farmers, raising grain, which they hauled to market at Easton. The first industries in the two townships were gristmills, whose construction began around 1780. Other early industries included a sawmill on the Plymouth side, and a forge in Hanover Township. Hanover saw little commercial development during this period, but Plymouth village had a store by 1774; two schoolhouses were built in the village immediately following the Revolution. Difficulties with Indians and rival Pennamite settlers restrained the growth of the area until about 1800.

In the early nineteenth century, the pace of development quickened. The settlement began to expand outside the nascent village of Plymouth; about 1815, a group of pioneers established a community northeast of the village, and another offshoot settlement was founded in 1827. About a half-dozen mercantile enterprises were begun in Plymouth Township in this period, in addition to two more gristmills and two new schools.

Plymouth is distinguished as the birthplace of the anthracite coal industry in the United States. Trade in hard coal was initiated in Plymouth in 1806 when Abijah Smith purchased 75 acres of coal land on the east side of Ransom's Creek (or Coal Creek), at the upper end of the present Coal Street. He began mining the following year, and shipped about fifty tons of coal down the Susquehanna River to Columbia, in Lancaster County. This represented the first anthracite coal ever offered in the market. In the spring of 1808, Abijah Smith and his brother John sent two loads of anthracite coal totaling about 120 tons to Columbia, but could not sell it, as the prospective customers were unable to burn the hard coal. The following year, the Smith brothers again went to Columbia and this time conducted a demonstration, using a grate to burn the anthracite coal. This persuaded the spectators of the utility of the substance, and opened a small trade, from which the great anthracite industry of Pennsylvania eventually grew.

In the early stages of the industry, coal was taken by stripping the earth off deposits that lay close to the surface or by quarrying, rather than deep shaft mining. Teams drove directly into the Smith coal works and loaded, with six loads considered a day's work. Plymouth also is credited with the introduction of blasting powder in coal mining, when Abijah Smith brought John Flanigan from Milford, Connecticut to begin blasting in March, 1818.

The subsequent development of the coal industry marked a change in the character of Plymouth from village to city. Daniel Davenport was engaged in the mining of coal in Plymouth Township as early as 1826. Among the early miners were Freeman Thomas, Jameson Harvey, Ziba Davenport, Thomas Borbidge, Francis J. Smith, John Ingham, John Flanigan and Martin Brennan. In 1865, W. L. Lance sunk Shaft No. 11 just at the northeast boundary of the present borough, demonstrating abundant and valuable coal resources: this deep shaft mine reached a series of veins totaling seventy feet of solid coal bed at a depth of 400 to 600 feet. Previous to that time, coal had been taken only from the top veins or by "drift" mining.

Development of Plymouth Borough paralleled that of the coal industry which it nurtured and served. A petition to the court to establish a borough was circulated November 2, 1865; it gained 58 signatories. The charter was granted and the borough incorporated April 23, 1866; the first meeting of the borough council was held May 16, 1866.

Construction of brick buildings along Main Street commenced in 1850 with the store of E. C. Wadhams; development accelerated in the 1860s and 1870s. By 1867 the town had 29 stores, and an opera house and hotels were built soon thereafter. Notable businesses of this period included the First National Bank, the Wren Iron Works, and the planing mill of Harvey Brothers & Company. Six churches had been built in the community by 1880, serving Roman Catholic, Episcopal, Methodist, Presbyterian, and Welsh Independent congregations.

Public utilities began serving Plymouth citizens in 1875. Public gas service was first furnished to Plymouth in 1875; in 1886, the gas company was consolidated with the newly-chartered Plymouth Light, Heat, and Power Company, providing both gas and incandescent electric light. On February 20, 1886, the town's electric streetlights were first lighted; service increased from 11 streetlights in 1887 to 92 in 1902. The Plymouth Water Company was organized in 1875. The company constructed a reservoir just below the railroad depot in the town; water was collected by a series of four stone dams from streams fed by springs in the mountains of Plymouth Township. In 1880 the company sunk four artesian wells with a capacity of 15,000 gallons per day to feed four large reservoirs holding 10,000,000 gallons.

By 1880, large coal companies had purchased or leased the interests of practically all the independent operators in Plymouth, and controlled a booming industry. In 1889, the collieries of Plymouth employed over 7,000 people, and produced an output for the year of over 1,600,000 tons.

In addition to the dominant coal industry, Plymouth numbered many other businesses at the turn of the century. Listed in the 1893 History of Luzerne County were: 39 grocery stores, 26 general stores, 7 drugstores, 3 furniture dealers, and a broad variety of specialty shops; 10 coal breakers represented the dominant industry, but other factories in the borough turned out carriages, cigars, mine equipment, and millwork; building materials, hardware, and paints were sold to support a booming construction trade; 5 hotels and 3 livery stables served travelers, and an express agent and a long distance telephone and telegraph office forged links with the outside world.

The history of Hanover Township on the opposite side of the Susquehanna parallels that of Plymouth Township. Following its establishment in the 1760s, the township grew slowly through the eighteenth century, with the majority of its residents engaged in agriculture or related industries.

Hanover Township had 613 residents in 1800. The population grew to 879 in 1820, and 1,173 in 1830. This period saw the beginning of the coal industry in the township, which remained primarily agricultural. The first coal shipment from Hanover was in 1813, when James Lee sent one four-horse load from Hanover to Germantown. In 1820 Colonel Washington Lee sent 1,000 tons to Baltimore and sold the coal for $8 per ton.

The coal industry transformed the landscape of Hanover Township beginning in the mid-nineteenth century. The first land purchased for coal mining purposes in the township was bought in 1838 by Samuel Holland; the same year, Holland and his partner Colonel Hillman dug a basin at the river for loading coal barges and built a gravity railroad from the basin to their mines at the foot of the Little Wilkes-Barre Mountain about three miles away. Upon completion of these works two years later, sources indicate that they shipped between 10,000 and 15,000 tons per year by water to markets in New York and Philadelphia over the next eight years. Financial reverses, however, idled these mines from 1848 to 1865.

The 1840 census for Hanover Township showed a total population of 1,938; the population decreased to 1,506 in 1850. This decline is partly attributable to emigration to the West during this period. Despite employment opportunities offered by the growing coal and railroad industries, the promise of fertile lands to the west attracted farmers who were happy to sell their exhausted fields for coal extraction at the going rate of about $50 per acre. Between 1850-60 large coal operators began assembling extensive holdings.

As in Plymouth Township and elsewhere in the Wyoming Valley, after 1860 the coal industry developed rapidly in Hanover Township. The shaft of the Dundee Company was sunk in 1866 to a depth of 792 feet. As of 1878, two collieries were noted in the township: the Franklin colliery, which employed 156 men and boys underground and 169 on the surface, and mined 83,241 tons in 1878, and the Espy colliery, operated

by the Lehigh and Wilkes-Barre Coal Company.

The population of Hanover Township in 1880 was 2000. By this time the coal and railroad industries had achieved complete dominance over the economic life of the township. As at Plymouth across the river, small coal operators had been driven from the market. Nearly the whole township was owned by five great coal companies: the Lehigh Navigation and Coal, Delaware Lackawanna and Western, Wilkes-Barre Coal and Iron, New Jersey Coal, and Susquehanna Coal companies. Hanover had become one of the chief coal-producing townships of the Wyoming coal fields. A local historian described the effect of this transformation in graphic terms in 1885:

> No business is carried on in the township and boroughs but the coal business and railroading, and such mercantile business and mechanical trades as are necessary on account of them, and the wants and needs of a mining population. Farming has fallen to a very low condition and but little is done. . . . Lands about the mines and their neighborhood for a distance of half a mile or more are generally uncultivated and thrown open to commons, on account of the difficulty of securing any crops from them. . . . The mines, the railroads, the repair shops and machine shops are the business of the people now. . . . Indeed, there is almost nothing made here now and nothing produced except coal. But of coal the production is very large and overshadows everything else.

The dominance of the coal industry over Hanover Township and Plymouth Borough, as well as over Luzerne County generally, continued well into the twentieth century. By the turn of the century, the coal resources around Plymouth had been exploited, with ever-increasing intensity, for nearly a century; some began to fear their eventual depletion, and looked for other economic opportunities elsewhere. The continuing expansion of the coal fields in Hanover Township attracted the attention of Plymouth workers; however, the lack of a convenient, reliable, and inexpensive means of crossing the Susquehanna River presented a serious obstacle to would-be commuters, and the two areas remained mutually isolated. By that time, siltation of the river from mine waste had begun to interfere with the operation of ferry service between Plymouth and Hanover; other forms of water transport had always been unreliable and even dangerous in winter or bad weather. The only bridge was a toll bridge constructed in 1894 to carry trolley cars; located at Carey Avenue, the extreme eastern boundary of the borough, this crossing was inconvenient for the majority of Plymouth's 13,000 citizens. Although the county had entered negotiations to acquire this bridge and eliminate the toll, this process was moving slowly, and the problem of its inconvenient location could not be mitigated.

The Plymouth Railway Company enjoyed a virtual monopoly on river crossing between Plymouth and its neighboring communities for many years. Before the railway company constructed the Carey Avenue bridge, communication with Plymouth required a lengthy trip overland via Edwardsville, crossing the Susquehanna at Wilkes-Barre; alternatively, a traveler could book passage on a steamer or ferry. After deposits choked the river by the end of the nineteenth century, eliminating ferry service, local citizens became frustrated: a contemporary writer observed that "people . . . almost felt compelled to use the [toll] bridge."

Citizens began to petition for the construction of a new bridge, to be built entirely at County expense and in a more central location, and on November 28, 1908 they presented their petition to the Court of Quarter Sessions of Luzerne County. The proposed site linked Hanover Street in Plymouth Borough with Plymouth Avenue in Hanover Township.

County officials initially opposed the project, holding that no new river bridges should be constructed until all the existing toll bridges were made free; the Plymouth Bridge Company, operators of the toll facility, also resisted the proposal.

The three viewers appointed by the court to consider the proposal inspected the site and held a series of public meetings on January 14, 15, and 16, 1909. Shortly thereafter, two of the three viewers returned a determination that the crossing was not warranted. Their report estimated the cost of the proposed structure at $250,000 to $300,000, and noted that this was the first instance in which the county had been asked to construct a bridge across the Susquehanna River at its own expense. They concluded that, in spite of the convenience such a structure would offer for "the inhabitants of Plymouth and a small number of the inhabitants of Hanover Township, . . . there [was] no public necessity for the bridge."

The dissenter was M. H. McAniff, a prominent Wilkes-Barre attorney who presented an eloquent case for the crossing, citing the "crying and deserving demand of thirty thousand people for a bridge at a point leading from the center of population to another point which will be in a very few years the center of the greatest anthracite coal mining industry to be found in any part of the world." Such a crossing, McAniff continued, would serve the "teeming thousands who see their former means of livelihood rapidly disappearing by the exhaustion of the coal reserves on the Plymouth side of the river."

The proponents of a new bridge wasted little time in filing an answer to the objections of the viewers. Their response, presented to the Court on January 23, 1909, took the viewers to task for misinterpreting their duty. A telling point was that the viewers had not been charged to consider "the general necessity to the citizens of the county," but rather only to report specifically on "the necessity of [the] proposed bridge for the convenience of the traveling public," which they had failed to do. In addition, the

viewers had neglected to make an independent estimate of the costs of the proposed bridge, relying instead on testimony presented to them.

At the same time, the proponents presented the court with a second petition, asking that the proposal be reconsidered. On February 8, 1909, the Court appointed Edwin Shortz, Reese Floyd, and William Griffiths as reviewers, who gave notice that they would meet at 10:00 a. m. on February 18 "at the planing mill of Ambrose West, on the site of the proposed bridge" and, following their inspection of the site, would take testimony from interested parties at Town Hall in Plymouth Borough. So many people sought to present their testimony that the public meetings were continued on February 27 in Plymouth and on March 15, 16, and 22 at the County Courthouse in Wilkes-Barre. The reviewers met again at the site on April 17 to take courses and measurements.

The reviewers completed their deliberations on April 19, 1909, finding unanimously that the proposed crossing was warranted, but calling for a different location at the Hanover Township approach, extending from Fellowes Avenue (or "Old Ferry Road") rather than from Plymouth Avenue as originally conceived. This variation would enable the bridge to be erected "at the most suitable place and at the least expense and in the best manner . . . having respect to the shortest distance . . . and in such manner as shall do the least injury to private property and also be so far as practicable agreeable to the desire of the petitioners." The reviewers secured releases from the affected landowners, including Chester Lazarus and the Shawnee Land Company on the Hanover Township side; Ambrose West, owner of the planing mill on Hanover Street adjacent to the Plymouth Borough approach, reserved the condition that an opening be constructed through the Hanover Street approach to enable "teams loaded with lumber" to pass under it.

The Grand Jury of Luzerne County approved the report of the reviewers on June 1, 1909, agreeing that it was necessary to erect a bridge on the proposed site and recommending that the county bear all costs of construction, erection and maintenance; the Court confirmed the Grand Jury's report on June 19. The County Commissioners directed that the proposed bridge be entered of record as a county bridge on September 28, 1909.

The project was delayed by a series of procurement difficulties and legal challenges. On February 10, 1910, the Scofield Engineering Company was awarded the contract for design, and James G. Clarke was retained to sink test borings. Legal questions concerning assessments and bonded limits of the County delayed advertisement for construction bids until September 1910; the first bids received were considered too high, and a second request for bids went out on October 13, 1910. At that time, the Penn Bridge Company of Beaver Falls submitted the low bid of $276,973, and was awarded the contract for the entire project.

The Penn Bridge Company was organized in 1868 by T. B. White & Sons.

Advertisements and directory references indicate that the company operated facilities both at New Brighton, Pennsylvania and at Beaver Falls, across the Beaver River from New Brighton. The Penn Bridge Company produced such items as wrought iron, steel, and combination bridges, iron substructures, and building and roof trusses. An 1885 trade catalog published by the company indicated that over the years since its establishment, the firm had produced a total of over ten miles of metal truss bridges. Undoubtedly, much of that mileage in the early period of the company's existence consisted of small pony truss spans under ninety feet in length, such as Luzerne County Bridge No. 17013, an 1882 product of the works. The firm continued to grow substantially through the first decade of the twentieth century, producing small and large bridges as well as structures such as the multiple-span structure linking Plymouth and Breslau.

Construction of the bridge piers and approaches was subcontracted to M. H. Stebbins of Wellsboro, who engaged Zeiser Brothers of Wilkes-Barre for the reinforced concrete work on the Breslau approach. The Horsehead Construction Company was responsible for the erection of the structural steel.

Construction was delayed when the Delaware, Lackawanna & Western Railroad sought an injunction to prevent establishment of a grade crossing of their tracks at the Hanover Street approach in April 1911. This injunction suspended construction for over two years, until it was finally lifted in May 1913. The bridge was opened less than a year later, on February 27, 1914, linking Plymouth Borough with Breslau, an expanding town located above the broad river flats on the Hanover Township side.

Upon its completion, the Breslau Bridge was described as "the most modern structure within the county." A newspaper account stated that it had a total length of 3,527 feet, comprising six steel Parker truss spans totaling 1,257 feet, supported by concrete river piers, a 283-foot reinforced concrete approach span on the Plymouth end, a 1,147-foot reinforced concrete viaduct on the Breslau end joined to 840 feet of earth fill with a macadam paved roadway. The bridge roadway, which was paved with brick, had a clear width of 18 feet, and a width between curbs of 17 feet. The sidewalk was five feet wide, with a steel lattice handrail on the bridge and approaches and a rail of galvanized pipe carried on concrete posts on the Breslau fill. Provision was made for 35 electric light standards, with transformers located within concrete end posts at the portals; the system was designed to allow the County to purchase electric current at either end. The bridge floor and approach roadway were designed to be at a height approximately 17 to 18 feet above the high water mark of the 1902 flood.

The Parker trusses, the distinguishing portion of the bridge, were erected of pin-connected, standardized members, as was the practice for metal truss bridge fabrication in the nineteenth and early twentieth oenturies. The individual truss member configuration is typical of truss bridges of that era, consisting of eyebars and built-up members made of angles, channels, plates and lacing bars. The truss panels, however,

form an atypical, asymmetrical profile, reflecting the skew of the bridge.

As the first Susquehanna River bridge erected entirely at the expense of Luzerne County, the Breslau Bridge marked a very significant milestone in local infrastructure; its opening, however, was not commemorated by any formal celebration or ceremony. The first vehicle to cross it was an "automobile bus" driven by Frank Martz of Plymouth, founder of the first bus transportation company in Pennsylvania. Martz was accompanied by H. S. Battie, resident engineer for the bridge's construction, and a group of workmen.

The new bridge immediately drew traffic away from the Carey Avenue toll bridge, as the Plymouth Railway Company had undoubtedly feared, and resulted in the virtual abandonment of the Carey Avenue bridge except for the streetcars operated by its owners. The citizens' resentment of the tolls is evident both in the testimony in support of the new bridge and in newspaper reports of the opening of the Plymouth-Breslau crossing. One writer observed, "it would be difficult to estimate now the material benefit that will be derived by the people of Plymouth from the new bridge. The present [i. e., Carey Avenue] bridge is owned by a stock company and ever since its erection pedestrians as well as vehicle traffic has [sic] been charged a toll. One man estimates that he has paid $3,000 annually for the permitting of his passenger auto bus to use the bridge." After many years of citizens' complaints, the Carey Avenue bridge was finally acquired by Luzerne County, repaired and reopened to vehicular use free of charge after World War I.

The Breslau Bridge carried traffic successfully for almost thirty years until it developed problems. On December 31, 1943, the Breslau Bridge was ordered closed due to structural deficiencies. County officials had determined that the bridge was structurally unsound and constituted a safety hazard. Major repairs were necessary to return the bridge to a functional state. Newspaper accounts identified the primary cause for the bridge closing as sinking of the substructure river piers. Six piers were involved, one of which had reportedly sunk 2-1/2 feet. Also as a result of the settlement, several of the concrete piers had developed serious cracks, and the bridge suffered from twisting of the steel truss members. County officials offered two theories for the pier settlement. It was known in 1911, before bridge construction began, that coal extraction had created voids beneath the river bed; subsidence was attributed to this undermining. Alternatively, it was suggested that an unstable soil layer underlying the river had been disturbed by a series of floods, most recently in 1936.

Luzerne County officials, with the support of various local groups such as the Plymouth Businessmen's Alliance, sought to transfer the responsibility for the Breslau Bridge from the County to the State. The County assumed that the State possessed greater economic resources to deal with the repairs. Initially, the Governor and the Secretary of the Highway Department were encouraging. The authority by which the State could accept the bridge rested in a new resolution adopted on May 28, 1943 which

permitted the State to take over the responsibility for county roads when so requested by the County. A debate ensued over the question whether a bridge should be included under the heading of county "roads." Following weeks of deliberation, the State Highway Department refused to accept the bridge on grounds the resolution only specifically applied to county roads. The cost of repairs was estimated at one million dollars, and the state was reluctant to invest this sum in a bridge which it did not clearly own, especially in a period of wartime austerity. Secretary John V. Shroyer of the State Highway Department expressed the opinion that the expensive repairs were not warranted, but offered to consider the construction of a new bridge after the war.

With the state's refusal to accept the bridge, Luzerne County began to investigate repair options. State engineers had estimated repairs totaling one million dollars, which the County could ill afford. The County sought an alternative and hired consulting engineer Arthur G. Leake of Harrisburg. Leake's estimate for the necessary repairs was $200,000. His suggested program involved increasing the size of the river piers by driving piles on each side of the existing piers and encasing the piers within a reinforced concrete shell three times the size of the original. Longer piling and the enlarged footings theoretically would prevent the piers from sinking or shifting. Leake's estimate of $200,000 included a means for repairing the twisted steel as well. In response to the engineer's conclusion that the bridge was in danger of collapsing, the County Commissioners took immediate action and hired Leake to oversee the repair work in July 1944, seven months after the closing.

During the repair work, Leake discovered additional problems with the bridge. The railings and some other steel members were found to be completely deteriorated, requiring replacement. In addition, the concrete wearing surface which had been applied to the bridge deck sometime after original construction had added 100 tons of weight to each of the six spans, taxing the designed load capacity of the structure. A new lighter deck was recommended to correct this potential danger.

In addition to the identified structural deficiencies, increasing traffic demands had also rendered the bridge functionally obsolete. Scorned by one journalist as a product of the "horse-and-buggy" era, its roadway proved too narrow to accommodate the motor vehicles of the 1940s. The plans developed by Leake not only addressed the bridge's structural problems, but also provided for widening the clear roadway an additional five feet. This was accomplished by cutting the transverse members and moving the south trusses five feet downstream. Timber bents were erected at each panel point, or joint, on the south truss. The lateral struts and bracing were cut, and new five feet long sections were fabricated for them. The south trusses for all six spans were moved five feet downstream and the new lateral sections were riveted to the cut portions. Stresses were equalized in the truss members using Leake's patented system.

By October 1944, repair work amounting to $18,970 for Pier Number Six had been authorized by Leake and completed by Whittaker and Diehl Construction Company. As

the ownership of the bridge was still being debated, all other work ceased at that point pending settlement of the jurisdictional issue.

Contemporary newspaper accounts referring to the question of bridge ownership do not document the resolution of the issue. The debate continued throughout 1944 but the question only received nominal coverage in the following year. Articles imply that the State did not make any financial contribution toward the repair of the bridge.

Luzerne County spent a total of $573,000 for repairs and reconstruction work on the Breslau Bridge, including a 15% commission to Leake for the use of his patented methods. This fee, some 6% higher than average, caused some consternation among local officials, and the final cost exceeded the original estimate by over $300,000. To pay off the debt, the County raised the necessary funds through a $1,500,00 bond bill. The excess funds were applied to other county projects. The repaired and widened Breslau Bridge reopened unceremoniously on June 25, 1946.

The Breslau Bridge has been closed for repairs and maintenance repeatedly throughout its history. A badly needed paint job closed the bridge for several months in 1961. More extensive repairs were necessary after the disastrous flood caused by Hurricane Agnes in 1972. The flood waters caused damage requiring the bridge to be closed for seven months, while the B. G. Coon Construction Company carried out repairs totaling $305,984. In October 1985 the Breslau Bridge was again found structurally deficient and has remained closed to traffic since that date.

Since its opening in 1914, the bridge has undergone significant alterations. Although the truss spans were cut laterally and moved five feet, the trusses themselves remain essentially unaltered.

It has been determined that the Breslau Bridge cannot be rehabilitated. The bridge will be removed and replaced by a new structure.

BIBLIOGRAPHY

After Agnes: A Triumph Over Destruction. Wilkes-Barre, PA: Times-Leader, 1982.

Atkins, Herbert E., ed. The Wyoming Valley Floods of 1936. Wilkes-Barre, PA: The Collins Press, 1936.

Beers, D. Atlas of Luzerne County, Pennsylvania. Philadelphia: Pomeroy & Company, 1873.

Bradsby, Henry C. History of Luzerne County, Pennsylvania. Chicago: S.B. Nelson and Co., 1893.

First National Bank of Plymouth, Pennsylvania. Seventy-fifth Diamond Anniversary. Plymouth, PA: First National Bank, 1940.

French, Samuel Livingston. Reminiscences of Plymouth. Plymouth, PA: By the author, 1915.

Harvey, Oscar J. and Smith, Ernest G. A History of Wilkes-Barre. Wilkes-Barre, PA: By the author, 1930.

History of Luzerne, Lackawanna and Wyoming Counties. New York: W.W. Munsell & Co., 1893.

Iron Highway Bridges, As Built by the Penn Bridge Company, Beaver Falls, Pa. 1885. Beaver Falls, PA: Penn Bridge Company, 1885.

Jenkins, Thomas. "The History of Plymouth." In Gateway to the Future: Plymouth, Pennsylvania Centennial 1886-1966. Undated pamphlet at Plymouth Public Library, Plymouth, PA.

League of Women Voters of the Wilkes-Barre Area. This is Luzerne County. Wilkes-Barre, PA: League of Women Voters of the Wilkes-Barre Area, 1976.

Luzerne County Commissioners Office Road Docket Volume "T" (1907-1911): 234-259. At Luzerne County Courthouse, Wilkes-Barre, PA.

(continued)

Luzerne County Engineer's Office. Original Bridge Drawing for Breslau Bridge. Contract No. 686, Sheet No. 20, dated August 9, 1910. Original Bridge Drawing held at Luzerne County Engineer's Office, Wilkes-Barre, Pennsylvania.

Luzerne County Engineer's Office. Original Bridge Drawings for Widening of Breslau Bridge. Sheets 15A, 20, 27, 30, 23, 35, 40, 45, and 48, dated August 7 - October 31, 1944. Original bridge drawings held at Luzerne County Engineer's Office, Wilkes-Barre, Pennsylvania.

Myers, Wilbur A. Historical Album of Wilkes-Barre and Wyoming Valley in Luzerne County, Pennsylvania 1729-1976. Wilkes-Barre, PA: Luzerne County Bicentennial Commission, 1976.

Osterhout Free Library. Vertical files. At Osterhout Free Library, Wilkes-Barre, Pennsylvania.

Pearce, Stewart. Annals of Luzerne County. Philadelphia: J.B. Lippincott & Co., 1860.

Phillips, Edward. "History of Wilkes-Barre, Luzerne County, Pennsylvania." Manuscript history in collections of the Wyoming Historical and Geological Society, Wilkes-Barre, PA.

Plumb, Henry Blackman. A History of Hanover Township including Sugar Notch, Ashley and Nanticoke Boroughs, and also A History of Wyoming Valley in Luzerne County, Pennsylvania. Wilkes-Barre, PA: Robert Baur, 1885.

Plymouth Bicentennial Commission. A Self-guided Tour of Historic Plymouth. Plymouth, PA: Plymouth Bicentennial Commission 1976.

R.L. Polk and Company. Wilkes-Barre Directory. Wilkes-Barre, PA: R.L. Polk and Company, 1915-1918.

Sanborn Map Company. Fire Insurance Maps for Plymouth, Pennsylvania. Editions of 1884, 1891, 1896, 1902, 1907, 1912, 1925, and 1946. Pelham, NY: Sanborn Map Co.

Thomas, David, C. E. "Map of Plymouth Borough" 1889. Map in collections of the Wyoming Valley Historical and Geological Society, Wilkes-Barre, PA.

Wilkes-Barre (Pennsylvania) Citizen's Voice, Mar. 24, 1982; Mar. 29, 1988.

Wilkes-Barre (Pennsylvania) Record, Jan. 26, 1944.

(continued)

Wilkes-Barre (Pennsylvania) Record, Oct. 28, 1910; Feb. 16, 1914; Feb. 28, 1914.

Wilkes-Barre (Pennsylvania) Record Almanac, 1899-1912.

Wilkes-Barre (Pennsylvania) Sunday Independent, Jan. 9, 1944; Jan. 30, 1944; Feb. 6, 1944; Feb. 13, 1944; Feb. 20, 1944; Mar. 6, 1944; Mar. 12, 1944; May 21, 1944; June 11, 1944; July 9, 1944; Oct. 22, 1944; Aug. 16, 1945; Oct. 27, 1974.

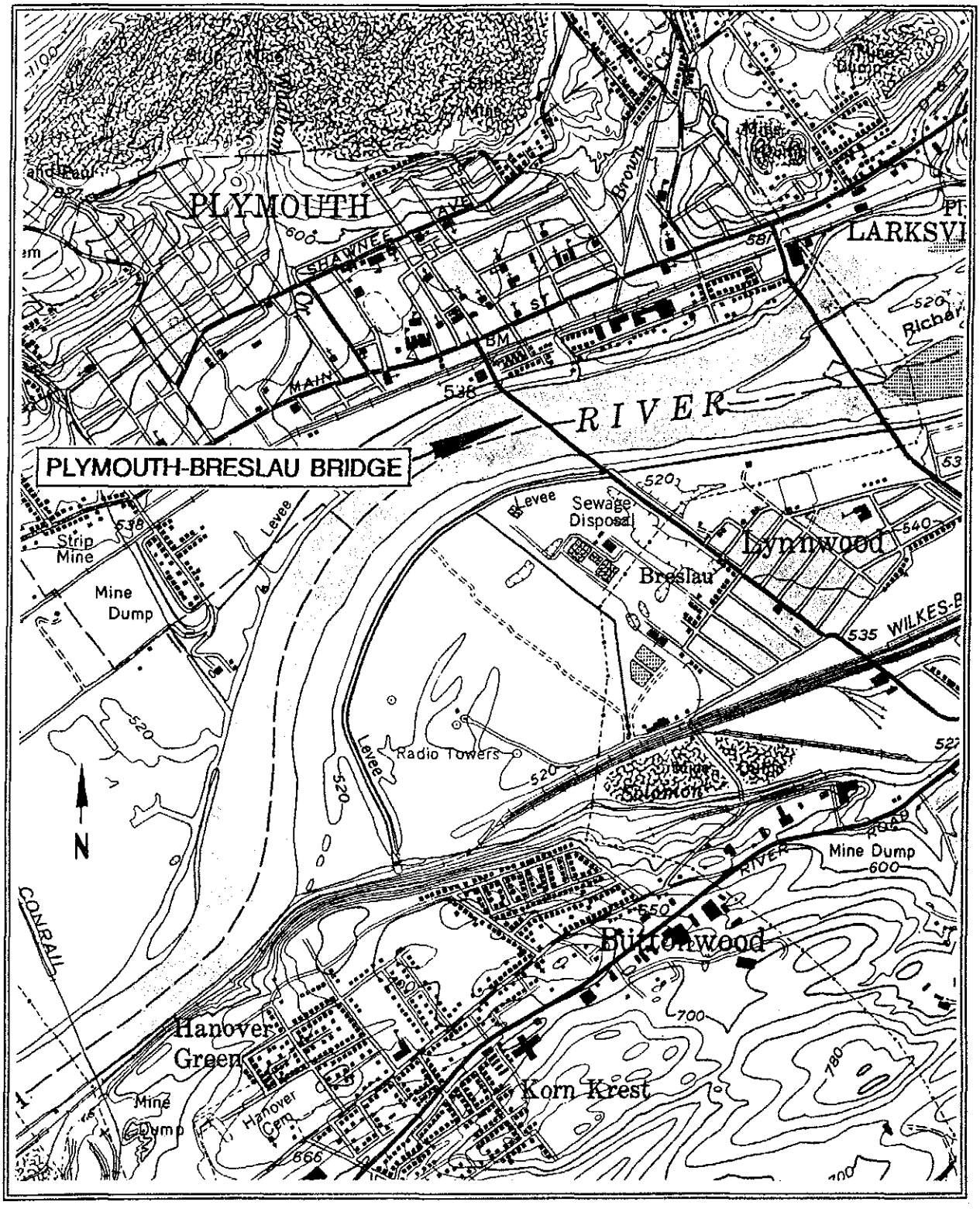
Wilkes-Barre (Pennsylvania) Times-Leader Evening News, Jan. 21, 1944; June 25, 1946.

Wilkes-Barre (Pennsylvania) Times-Leader, Oct. 5, 1961; Mar. 20, 1987.

Wright, Hendrick Bailey. Historical Sketches of Plymouth, Luzerne County, Pennsylvania. Philadelphia: T.B. Peterson & Bros., 1873.

Wyoming Historical and Geological Society. Vertical files. At Wyoming Historical and Geological Society, Wilkes-Barre, Pennsylvania.

Site Plan


PLYMOUTH
PLYMOUTH-BRESLAU BRIDGE
RIVER
Strip Mine
Mine Dump
Levee
Sewage Disposal
Breslau
Lynnwood
WILKES-B
Radio Towers
Solomon
Buttonwood
Mine Dump
CONRAIL
Hanover Green
Korn Krest
Hanover Cem.
Mine Dump
MAIN
SHAWNEE
BM
N